Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-15. (Canceled)

16. (previously presented) An intra-buccal sensor sensitive to x-rays of a first wavelength emerging from an irradiated tooth and comprising:

a. means, comprising a plurality of cylindrical rods positioned side-by-side with each rod having a longitudinal axis, for both (i) guiding the x-rays emerging from the tooth substantially along the longitudinal axes of the cylindrical rods and (ii) transforming the guided x-rays into light rays of wavelength greater than the first wavelength, the cylindrical rods being produced from a material enabling both the guiding and the transformation of the x-rays; and

b. a plurality of optical fibers connected to the cylindrical rods.

17. (previously presented) An intra-buccal sensor according to claim 16 further comprising means, connected to the plurality of optical fibers, for converting light rays to electrical signals.

18. (previously presented) An intra-buccal sensor according to claim 17 in which the converting means comprises a CCD.

19. (previously presented) An intra-buccal sensor according to claim 17 in which each of the cylindrical rods has an outlet face to which an optical fiber is connected.

20. (previously presented) An intra-buccal sensor according to claim 19 in which (i) each of the cylindrical rods further has an inlet face capable of receiving the x-rays and (ii) the outlet faces are capable of emitting the light rays.

21. (previously presented) An intra-buccal sensor according to claim 16 in which the cylindrical rods are produced from caesium iodide crystal.

22. (previously presented) An intra-buccal sensor according to claim 16 in which the cylindrical rods have substantially cylindrical revolving configuration, length between 80 to 200 μm, and diameter between 3 to 7 μm.

23. (previously presented) An intra-buccal sensor according to claim 16 in which the cylindrical rods form a mosaic.

24. (new) An apparatus comprising an intra-buccal sensor sensitive to x-rays emerging from an irradiated tooth and its surrounding area and comprising:

means comprising a plurality of cylindrical rods, positioned side-by-side, for both guiding and transforming the x-rays into light rays;

a plurality of optical fibers connected to the cylindrical rods;

means for converting the light rays into electrical signals, connected to the optical fibers; and

means for filtering the electrical signals, so as to retain the electrical signals of selective parts of the tooth and its surrounding area.

25. (new) The apparatus according to claim 24, wherein the means for filtering the electrical signals comprise at least one of the following three filters:

a low-pass filter, which is capable of eliminating the electrical signals corresponding to the x-rays after they have traversed the most opaque parts of the tooth and its surrounding area;

a band-pass filter, which is capable of passing through the electrical signal corresponding to the x-rays after they have traversed a dentine part of the tooth and material parts of its surrounding area substantially equivalent to the dentine; and

a high-pass filter, which is capable of eliminating the electrical signals corresponding to the x-rays after they have traversed soft tissues and its surrounding area.